



FACT SHEET

NPDES Permit Number: AK-002294-2
Date: May 22, 2009
Public Notice Expiration Date: June 22, 2009
Technical Contact: Cindi Godsey (907) 271-6561 or
1-800-781-0983 (within Alaska)
godsey.cindi@epa.gov

The U.S. Environmental Protection Agency (EPA) Plans To Re-issue A Wastewater Discharge Permit To:

**Golden Valley Electric Association, Inc.
Healy Power Plant
near
Healy, Alaska**

and the State of Alaska proposes to Certify the Permit

EPA Proposes NPDES Permit Issuance.

EPA proposes to re-issue a *National Pollutant Discharge Elimination System* (NPDES) permit to the Golden Valley Electric Association, Inc. (GVEA) for the Healy Power Plant. The draft permit sets conditions on the discharges of pollutants from the facilities to the Nenana River. In order to ensure protection of water quality and human health, the permit places limits on the types and amounts of pollutants that can be discharged.

This Fact Sheet includes:

- information on public comment, public hearing, and appeal procedures
- a description of the current discharge
- a description of the discharge locations and a map, and
- technical material supporting the conditions in the permit

NEPA Categorical Exclusion

EPA has determined that this proposed action, the reissuance of the NPDES permit, may be categorically excluded according to 40 CFR 6.204(a)(1)(iv). EPA is required to document this determination and will do so in compliance with the requirements of 40 CFR 6.204(a)(1) after reviewing the comments received on the draft permit.

Alaska State Certification.

EPA requests that the Alaska Department of Environmental Conservation (ADEC) certify the NPDES permit for Healy Power Plant under section 401 of the Clean Water Act (CWA). EPA may not issue the NPDES permit until the state has granted, denied, or waived certification. The state of Alaska has provided a draft certification for the permit (See Appendix B). For more information concerning this review, please contact Shawn Stokes at (907) 269-7504 or 555 Cordova Street, Anchorage, Alaska 99501 or Shawn.Stokes@alaska.gov

Public Comment

EPA will consider all substantive comments before issuing the final permit. Those wishing to comment on the draft permit may do so in writing by the expiration date of the Public Notice. All comments should include name, address, phone number, a concise statement of basis of comment and relevant facts upon which it is based. All written comments should be addressed to the Office of Water & Watersheds Director at EPA, Region 10, 1200 Sixth Avenue, Suite 900, OWW-130, Seattle, WA 98101; submitted by facsimile to (206) 553-0165; or comments on the draft permit may be submitted via e-mail to godsey.cindi@epa.gov.

After the Public Notice expires and all substantive comments have been considered, EPA's Region 10 Director for the Office of Water & Watersheds will make a final decision regarding permit re-issuance. If no comments requesting a change in the draft permit are received, the tentative conditions in the draft permit will become final, and the permit will become effective upon issuance. If comments are received, EPA will address the comments and issue the permit along with a response to comments. The permit will become effective 30 days after the issuance date, unless the permit is appealed to the Environmental Appeals Board (EAB) within 30 days.

Persons wishing to comment on State Certification should submit written comments by the public notice expiration date to the Alaska Department of Environmental Conservation c/o Shawn Stokes, 555 Cordova Street, Anchorage, Alaska 99501 or Shawn.Stokes@alaska.gov

Documents are Available for Review.

The draft NPDES permit and related documents can be reviewed or obtained by visiting or contacting EPA's Regional Office in Seattle between 8:30 a.m. and 4:00 p.m., Monday through Friday (see address below). Draft permits, Fact Sheets, and other information can also be found by visiting the Region 10 website at <http://www.epa.gov/r10earth/water.htm>

United States Environmental Protection Agency
Region 10
1200 Sixth Avenue, Suite 900, OW-130
Seattle, Washington 98101
(206) 553-0523 or
1-800-424-4372 (within Alaska, Idaho, Oregon, and Washington)

The Fact Sheet and Draft Permit are also available at:

EPA Alaska Operations Office
222 W. 7th Avenue - Room 537
Anchorage, Alaska 99513-7588
(800) 781-0983 toll free in Alaska only

Alaska Department of Environmental Conservation
610 University Avenue
Fairbanks, Alaska 99709

For technical questions regarding the Permit or Fact sheet, contact Cindi Godsey at (907) 271-6561 or godsey.cindi@epa.gov. Services can be made available to persons with disabilities by contacting Audrey Washington at (206) 553-0523.

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Acronyms

AAC	Alaska Administrative Code
ADEC	Alaska Department of Environmental Conservation
ADNR	Alaska Department of Natural Resources
AIDEA	Alaska Industrial Development and Export Authority
BMP	Best Management Practices
BOD	Biochemical Oxygen Demand, five-day
°C	Degrees Celsius
CFR	Code of Federal Regulations
CWA	Clean Water Act
DMR	Discharge Monitoring Report
EAB	Environmental Appeals Board
EFH	Essential Fish Habitat
EPA	U.S. Environmental Protection Agency
ELG	Effluent Limit Guidelines
ESA	Endangered Species Act
GPM	Gallons per Minute
GVEA	Golden Valley Electric Association Inc.
HCCP	Healy Clean Coal Project
mg/L	Milligrams per liter (parts per million)
µg/L	Micrograms per liter (parts per billion)
MGD	Million gallons per day
MDL	Method Detection Limit
ML	Minimum Level
NPDES	National Pollutant Discharge Elimination System
RO	Reverse Osmosis Reject
s.u.	Standard Units
SWPPP	Storm Water Pollution Prevention Plan
TAH	Total Aromatic Hydrocarbons
TAqH	Total Aqueous Hydrocarbons
TSS	Total Suspended Solids
USFWS	U.S. Fish and Wildlife Service
WQBEL	Water Quality-based Effluent Limit
WQS	Water Quality Standards

TECHNICAL INFORMATION

I. APPLICANT

Golden Valley Electric Association, Inc.
Healy Power Plant
2.5 Mile Healy Spur Road
P.O Box 71249
Healy, AK 99707

Facility Contact: Kris DuBois (907) 451-5627

Facility Location: 2.5 Mile Healy Spur Road, Denali Borough, Healy, Alaska

II. FACILITY ACTIVITY

The Golden Valley Electric Association, Inc. (GVEA) operates the Healy Power Plant, a coal-fired electric generating facility. The facility is comprised of two units, Healy Unit No. 1 and the Healy Clean Coal Project (HCCP). The facility is located approximately 80 miles southwest of Fairbanks and 250 miles north of Anchorage. It is on the east bank of the Nenana River near the confluence of Healy Creek, approximately 2 miles east of the intersection of the George Parks Highway and the Healy Spur Road. The 65-acre site is approximately 4 miles north of the nearest boundary of Denali National Park and Preserve (see Appendix A).

Healy Unit No. 1 is a 25 megawatt (MW) conventional pulverized coal-fired electric generating facility that is owned by GVEA. It began operating as a baseload power plant in November 1967. The HCCP began operating in January 1998 and is a 50 MW coal-fired electric generating demonstration project funded jointly by the Department of Energy and the Alaska Industrial Development and Export Authority (AIDEA) under the Clean Coal Technology Program. The goal of the Clean Coal Technology Program is to demonstrate advanced coal utilization technologies that are more energy efficient and reliable, while reducing air emissions when compared with existing coal technologies. The HCCP combines two systems to create an innovative coal combustion emission control technology. The systems are TRW Applied Technologies Division's Entrained Combustion System and the Joy Technologies, Inc.'s Activated Recycle Spray Dryer Absorber System. The HCCP has not operated since 2000 but will resume operation in the future.

Although the HCCP is owned by AIDEA, it is operated by GVEA. Since the HCCP and the Healy Unit No.1 facilities are located on contiguous and adjacent property, were operated as a combined power facility under the common control of GVEA, and discharge to common outfalls, a single NPDES permit was issued to GVEA (Operator/Applicant), for the operation of Healy Unit No. 1 and the HCCP. The existing permit became effective on March 1, 2000 and expired on March 1, 2005. The existing permit has been administratively extended pending its reissuance. Combined operation is considered a new source, as defined in 40 CFR 122.29.

The Healy Unit No. 1/HCCP facility has two outfalls that discharge to the Nenana River. Outfall 001 and Outfall 002 discharge the combined condenser cooling water from the HCCP and Healy Unit No. 1. For much of the year Outfall 001 is typically used as the primary outfall, though discharges may be directed to either or both Outfalls 001 and 002. One function of discharge from Outfall 002 is to help maintain the HCCP and Healy Unit No. 1 cooling water intakes free of ice during winter operating conditions. The combined discharge from both facilities to the Nenana River averages approximately 60 million gallons per day (MGD), but can range up to 90 MGD during summer when ambient river water temperatures are warmer. As noted above, the HCCP is not currently operating, but intends to again operate during the term of this permit. Internal discharge point Outfall 001A includes low volume wastes from the HCCP wastewater treatment system. Outfall 001A discharges when HCCP and its wastewater treatment system are operational. There is no untreated wastewater discharge from Outfall 001A when the HCCP wastewater treatment system is not operational.

III. Compliance/Monitoring Summary

The facility has been in compliance with the requirements in the NPDES permit except for a limited number of exceedances. The permit exceedances identified in reviewing discharge monitoring reports (DMRs) which occurred during the existing permit term consist of the following (permit limitations are expressed parenthetically):

Date	Outfall	Constituent	Unit	Exceedance	Limit
01/31/2006	001A	pH	S.U.	8.6	8.5 (Maximum Daily)
09/30/2005	001A	TSS	mg/L	155	100 (Maximum Daily)
06/30/2005	001A	TSS	mg/L	120	100 (Maximum Daily)
07/30/2004	002	Temperature	°C	33.9	not over 32 °C for more than 10 minutes
02/28/2002	001A	Oil and Grease	mg/L	152 41.8	20 (Maximum Daily) 10 (Average Monthly)
09/31/2001	002	Temperature	°C	35.8	not over 32 °C for more than 10 minutes
09/31/2001	001	Temperature	°C	37.4	not over 32 °C for more than 10 minutes
09/31/2000	002	Temperature	°C	34.7	not over 32 °C for more than 10 minutes

The existing permit included a requirement to monitor for lead monthly at Outfall 001A for a period of 1 year starting 36 months after issuance of the permit. Lead was detected in 2 of the 11 sampled months between 3/31/2003 and 2/29/2004 at concentrations of 0.21 mg/L and 0.396 mg/L, measured at Outfall 001A. Flow rates measured at Outfall 001A between 1/31/2001 and 4/30/2006 ranged from 0 MGD (minimum reported flow 0.0004 MGD) to a maximum of 9.26 MGD; which is considered to be a reporting error. The second highest maximum flow during the period was 0.10 MGD while the

average flow during the period was 0.020 MGD. Flow rates measured at Outfall 001 between March 2000 and August 2004 averaged 0.023 MGD, with a maximum flow rate measured at 33.26 MGD. Flow rates measured at Outfall 002 between March 2000 and August 2004 were averaged at 16.73 MGD, with a maximum flow rate measured at 30.6 MGD.

IV. RECEIVING WATERS

- A. Outfall Locations. The facility discharges to the Nenana River through Outfalls 001 and 002 with the option to discharge through either one or both. Discharges consist of once through cooling water for the Healy Unit No.1 and the HCCP. During periods when the HCCP and its wastewater treatment system are operational, discharge also includes effluent from Outfall 001A.

The downstream Outfall 001 is located at latitude 63° 51' 25.622" N. and longitude 148° 57' 02.744" W. The discharge pipe is a submerged, single nozzle discharge pipe located approximately six (6) inches off the river bottom. The pipeline from the cross connect to the discharge structure has a sixty (60) inch diameter; however, the diameter of the last few feet of the pipe is reduced to thirty six (36) inches, creating a discharge pressure at the end of the pipe to encourage rapid mixing with the receiving waters of the Nenana River. The pipe is positioned perpendicular to the flow of the river.

The upstream Outfall 002 is located at latitude 63° 51' 22.679" N, and longitude 148° 57' 08.170" W. The discharge pipe is located above the Nenana River normal high water line and is partially submerged only when the river flow exceeds 23,000 cubic feet per second (cfs). Consequently, the discharge flows down the bank of the river prior to commingling with the receiving waters of the Nenana River.

Outfall 001A is an internal outfall consisting of wastewater from the treatment system (FS V.A.) prior to commingling with cooling water. This outfall discharges only during times when the HCCP wastewater treatment system is operational.

The facility does not discharge storm water. Instead, storm water is directed to a surface impoundment and retained on-site where it either evaporates or percolates, consistent with the facility's Best Management Practices (BMP) Plan.

- B. Water Quality Standards. The Alaska State Water Quality Standards (WQS) include use classifications, numeric and/or narrative water quality criteria, and an antidegradation policy. The use classification system designates the beneficial uses that each water body is expected to achieve (such as contact recreation, growth and propagation of fish, shellfish, etc.). The numeric and/or narrative water quality criteria are the criteria deemed necessary by the State to support the beneficial use classification of each water body. The antidegradation policy represents a three-tiered approach to maintain and protect various levels of water quality and uses.

The Nenana River is classified by the Alaska State Water Quality Standards as Classes (1) (A) (i) (ii) (iii)(iv), (B) (i) (ii), and (C) for uses as drinking, agriculture, aquaculture, and industrial water supply; contact and secondary recreation; and growth and propagation of fish, shellfish, other aquatic life and wildlife. The water quality parameters that could be found in the process wastewaters found at the facility (Outfall 001A) are: temperature, pH, total suspended solids (TSS), oil and grease, chromium, copper, iron, lead, zinc, and whole effluent toxicity. These parameters are commonly associated with wastewater discharges from coal-fired electric power plants. These parameters represent those constituents in the plant operational water that, as a result of using the fuel source, process chemicals, and pipelines with a specific metals make-up, could be elevated in the process wastewater discharge. In cooling water, temperature is the pollutant of concern.

- C. Receiving Water Flows. The low flows (1Q10 and 7Q10) for the Nenana River, as computed by the U.S. Geological Survey (USGS) from a gauging station upstream of the confluence of Healy Creek with the Nenana River, are both 297 cubic feet per second (cfs).

V. DESCRIPTION OF DISCHARGE

- A. Treatment System. The wastewater treatment system in the HCCP includes oil/water separation, multimedia filtration, and pH adjustment as necessary. The HCCP treats, filters, and reuses much of the wastewater generated from the HCCP plant operations when the HCCP is operational. After treatment and filtration, waste streams from the HCCP are reused in plant processes instead of using well or river water. Reusing the wastewater streams minimizes the amount of make-up water required and the amount of wastewater discharged from the plant facilities.

Excess treated wastewater that cannot be reused is commingled with the HCCP once-through circulating cooling water at Outfall 001A. The combined HCCP and Healy Unit No. 1 once-through circulating cooling water is then discharged to the Nenana River via Outfall 001 and/or Outfall 002. The wastewater streams at Outfalls 001 and 002 originate from a common mixing box, thus they are essentially the same in composition and temperature.

All process and operational wastewater from the Healy Unit No. 1 wastewater sump, and supplemental water as needed, is normally used to sluice fly ash and bottom ash from Healy Unit No. 1 to the Healy Unit No. 1 ash ponds. This wastewater infiltrates and/or evaporates and is not discharged to the Nenana River. Infiltration of this wastewater from the ponds to the underlying soils is regulated under Alaska Wastewater Disposal Permit No. 9231-DB013. The HCCP wastewater treatment system is sized to accommodate process and operational wastewater from Healy Unit No. 1, so treatment and discharge through Outfall 001A of these process streams remains an option under this permit.

B. Wastewater Streams. The following wastewater streams are associated with the Healy Unit No. 1 and HCCP facility:

1. Low Volume Wastewater/Bottom Ash Wastewater (maximum flow projections, in gallons per minute (GPM)):

Low Volume/Bottom Ash Wastewater	Flow
HCCP Boiler Blowdown Wastewater ¹	40 GPM
HCCP Reverse Osmosis Reject Wastewater	19 GPM
HCCP Demineralizer Regeneration Water	1 GPM
HCCP Floor and Equipment Drain Wastewater	10 GPM
Healy Unit No. 1 Wastewater ²	5 GPM
Total Low Volume/Bottom Ash Wastewater (maximum)	75 GPM (0.11 MGD)
¹ Much of the HCCP low volume wastewater is typically recycled during plant operations. ² Wastewater generated at Healy Unit No. 1 is normally used to sluice fly ash and bottom ash to the Healy Unit No. 1 fly ash ponds. Healy Unit No. 1 wastewater may also be treated by the HCCP wastewater treatment system and discharged through Outfall 001A.	

2. Thermal Discharges (Once Through Cooling Water – average and maximum over the term of the previous permit):

Thermal Discharges	Average Flow
HCCP ¹	40.3 MGD
Healy Unit No.1	16.72 MGD
Total Thermal Discharge	57.02 MGD
¹ HCCP average flow based on 1994 and 2000 NPDES Fact Sheets	

3. Coal Pile Runoff:

Coal pile runoff is directed to zero-discharge coal pile runoff basins.

4. Metal Cleaning Wastes:

The metal cleaning fluid waste treatment system removes chemical cleaning fluids and their resulting wastes, along with metal cleaning fluids used to clean the boiler and associated equipment during planned shutdowns. Metal cleaning fluids are collected into appropriate containers. These cleaning wastes are held at the plant site in short-term storage. They are transported offsite by an approved carrier to the original chemical supplier or to a qualified waste disposal facility. The volumes of metal cleaning fluids used at the HCCP and Healy Unit No. 1 are less than 0.1 GPM.

5. Bottom Ash Transport Water:

Healy Unit No. 1 fly ash and bottom ash is sluiced from Healy Unit No. 1 (using Healy Unit No. 1 operational water and make-up water) to the ash ponds. These ash ponds are zero discharge ponds.

6. Sanitary Wastes:

Sanitary wastes are discharged to a subsurface sanitary system. There is no discharge to the Nenana River.

7. Storm Water Runoff:

The Healy Power Plant is a zero discharge storm water facility. All storm water is directed into surface impoundments where it either evaporates or percolates. As required by AK-002294-2, the permittee has and implements a BMP Plan.

- C. Fire Protection Runoff Treatment System. The function of the fire protection runoff treatment system is to dispose of wastewater used during fire protection equipment tests and actual fires, if any, at the plant. Fire protection water discharged within the plant buildings during system tests and drills is treated for disposal in the same manner as floor drain and equipment drain waters. The average volume of fire protection water to be discharged on an intermittent basis, including the hydrant test water and emergency water, is calculated as less than 0.2 GPM.

VI. PERMIT REQUIREMENTS

A. Applicable Laws and Regulations

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet State WQS. In general, the CWA requires that the effluent limits for a particular pollutant be the more stringent of either technology-based effluent limits or water quality-based effluent limits (WQBELs). A technology-based effluent limit requires a minimum level of treatment for industrial point sources based on currently available treatment technologies. A WQBEL is designed to ensure that the WQS for a waterbody are being met. For more information on deriving effluent limits, see Appendix C. Monitoring requirements must also be included in the permit to determine compliance with effluent limitations.

B. Effluent Limitations

EPA reviewed applicable technology-based limits that apply to the discharges in accordance with applicable national effluent guidelines and standards listed in 40 CFR 402 through 699. The steam electric effluent

guidelines at 40 CFR 423 apply to the facility. The technology-based limits are further explained in Appendix C.

EPA performed an evaluation to determine WQBELs that could apply to the discharges based on an assessment of the pollutants discharged and a review of the State WQS. A detailed description of these analyses is presented in Appendix C. The following section summarizes the effluent limitations established in the draft permit.

1. Outfall 001A

Wastewater from the Healy Unit No. 1 and HCCP shall meet the following effluent limitations prior to being commingled with any cooling wastewater. If no discharge is occurring, monitoring is not required.

TABLE 1 – Effluent Limitations and Monitoring Requirements for Outfall 001A				
Parameter	Daily Maximum	Monthly Average	Sample Frequency	Sample Type*
Flow (MGD)	Report		Continuous	Recorder
Oil and Grease (mg/L)	20.0	10.0	1/week	Grab
Total Suspended Solids (TSS) (mg/L)	100.0	30.0	1/week	Grab
pH (S.U.)	6.5 to 8.5		1/week	Grab
* Effluent samples collected shall be representative of the effluent discharged without dilution from or contact with any outside sources. Results of analyses conducted under Part I.B.1. of this permit shall be submitted monthly on the DMR.				

2. Outfalls 001 and 002

- a. Outfall 001 and Outfall 002 discharge once-through cooling water from the Healy Unit No.1 and the HCCP; which has been commingled with treated wastewater from Outfall 001A. The draft permit establishes the following limits for these discharges.

TABLE 2 – Effluent Limitations and Monitoring Requirements for Outfalls 001 and 002				
Parameter	Daily Maximum	Monthly Average	Sample Frequency	Sample Type ¹
Flow, MGD	Report		Continuous	Recorder
Temperature ² , °C	Instantaneous maximum not to exceed 32 °C for more than 10 minutes per month		Continuous	Recorder
Lead ^{3,4} , ug/L	Report		Quarterly	Grab
<div>1. Effluent samples collected shall be representative of the effluent discharged without dilution from or contact with any outside sources. Results of analyses conducted under Permit Part I.B.2. shall be submitted monthly on the DMR.</div> <div>2. Required monitoring for temperature at Outfalls 001 and 002 may be measured at the mixing box. Results shall be reported on the monthly DMR. The total number of minutes that the temperature exceeded 32 °C shall be reported on the monthly DMR.</div> <div>3. All metals shall be analyzed as total recoverable.</div> <div>4. When sampling for lead, the analytical method shall have a minimum level (ML) no greater than 1 ug/L. Required monitoring for lead at Outfalls 001 and 002 may be measured at the mixing box.</div>				

- b. There shall be no discharge of total residual chlorine or free available chlorine.
- c. There shall be no discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid.
- d. There shall be no discharge of wastewater pollutants from fly ash transport water.
- e. There shall be no discharge of coal pile runoff.
- f. There shall be no discharge of metal cleaning wastewater.
- g. There shall be no discharge of floating solids, visible foam, other than in trace amounts, or oily wastes which produce a sheen on the surface of the receiving water.

C. Monitoring Requirements

40 CFR 122.48(b) requires that the permit contain monitoring requirements. Self-monitoring of effluent parameters is necessary for the permittee to demonstrate compliance with effluent limitations, to assure that State WQS are met, and to provide information for future permitting actions. Monitoring frequencies are based on EPA's determination of the minimum sampling frequency required to adequately monitor the facility's performance. Required sample types are based on the EPA's determination of the potential for effluent variability. These determinations take into consideration several factors, of which the most important are the pollutants of concern and the type of treatment system. Tables 1 and 2, above, include the monitoring frequency and sample type proposed in the draft permit. Changes in monitoring requirements from the previous permit are the removal of Total Aromatic Hydrocarbons monitoring and the addition of a monitoring for lead which can be done as a single sample at the mixing box since the water from here is split between the two outfalls and two samples are unnecessary. Total Aromatic Hydrocarbons were removed from monitoring because previous monitoring for this parameter showed a maximum concentration of 0.0021 mg/L, which is well below the WQS. The analysis in Appendix C shows there is no reasonable potential for this constituent in the effluent. Lead monitoring was conducted during the previous permit cycle at Outfall 001A but as discussed in Appendix C, EPA has found possible reasonable potential for lead based on data collected. To verify this information, lead monitoring has been added at Outfalls 001 and 002 during this permit term. The permit allows the sampling to be done at the mixing box so one sample result will be considered representative of both outfalls.

The permit requires ambient monitoring for temperature upstream and downstream of the outfall locations to verify the assumptions made during

the mixing zone analysis. ADEC has proposed, and the draft permit includes, ambient monitoring at two stations, one upstream of the discharges and one downstream of the discharges. ADEC has also proposed weekly ambient monitoring from May 1 to October 31 for the first 2 years of the permit. If WQS are met during this 2 year period, the facility may request that ADEC reduce ambient monitoring to twice per month.

D. Quality Assurance Plan

The permit requires the permittee to develop and implement a Quality Assurance Plan. The purpose of the Quality Assurance Plan is to establish appropriate sampling, handling, and analytical procedures for all effluent and ambient water samples taken.

E. Best Management Practices

Section 304(e) of the CWA requires EPA to include conditions in the NPDES permit that require the permittee to develop a BMP Plan and/or a Storm Water Pollution Prevention Plan (SWPPP) to control potential discharges such as runoff, spillage, and leaks. This permit requires a BMP Plan to control the discharge of toxics or hazardous pollutants by way of plant site runoff, spillage or leaks, sludge or waste disposal, and drainage from raw material storage. This requirement is unchanged from the previous permit.

The intent of the BMP Plan is to recognize the hazardous nature of various substances used and produced by the facility and the way such substances may be accidentally dispersed. The BMP Plan should incorporate elements of pollution prevention as set forth in the Pollution Prevention Act of 1990, 42 U.S.C. 13101.

The BMP Plan must be amended whenever there is a change in the facility or in the operation of the facility which materially increases the potential for an increased discharge of pollutants. This requirement is unchanged from the previous permit.

F. CWA § 316(b) – Cooling Water Intake Structures

EPA suspended the specific requirements for cooling water intake structures at Phase II existing facilities that would have applied to this facility. However, EPA did not suspend 40 CFR 125.90(b) requiring that permit authorities develop Best Professional Judgment (BPJ) controls for existing facilities to minimize the adverse environmental impact. As BPJ, EPA has determined that, until the suspended regulations are addressed, the facility must comply with any existing State Fish Habitat permits required for water withdrawal or acquire and comply with the necessary permits. This condition will be addressed under the applicable regulations at the time of permit reissuance.

G. Additional Permit Provisions

Sections II, III, and IV of the draft permit contain standard regulatory language that must be included in all NPDES permits. Because they are regulations, they cannot be challenged in the context of an NPDES permit action. The standard regulatory language covers requirements such as monitoring, recording, reporting requirements, compliance responsibilities, and other general requirements.

VII. **OTHER LEGAL REQUIREMENTS**

A. Endangered Species Act

Section 7 of the Endangered Species Act (ESA) requires federal agencies to request a consultation with the National Marine Fisheries Service (NMFS) and the U.S. Fish and Wildlife Service (USFWS) regarding potential effects an action may have on listed endangered species. EPA sent letters to the Services on November 21, 2005. The draft permit and fact sheet will be transmitted to the Services with a request for an updated species list.

B. Essential Fish Habitat

Section 305(b) of the Magnuson-Stevens Act [16 USC 1855(b)] requires federal agencies to determine whether any activity proposed to be permitted, funded, or undertaken by a federal agency may have an adverse effect on designated Essential Fish Habitat (EFH) as defined by the Act. The EFH regulations define an adverse effect as any impact which reduces quality and/or quantity of EFH and may include direct (e.g. contamination or physical disruption), indirect (e.g. loss of prey, reduction in species' fecundity), site-specific, or habitat-wide impacts, including individual, cumulative, or synergistic consequences of actions.

The Alaska Department of Fish and Game's Anadromous Waters Catalog shows that 3 species of salmon (coho, chum, and King) are present in the Nenana River. These are the EFH species of concern. EPA has determined that issuance of this permit is not likely to have an adverse effect on EFH in the vicinity of the discharge. Effluent limitations have been incorporated into the draft permit based on criteria contained in the considered to be protective of overall water quality in the Nenana River based its designated uses. EPA will provide NMFS with this determination for their review and possible recommendations. Any recommendations received from NMFS regarding EFH will be considered prior to final issuance of this permit.

C. State Certification

Section 401 of the Clean Water Act requires EPA to seek state certification before issuing a final permit. As a result of the certification, the state may

require more stringent permit conditions to ensure that the permit complies with WQS. The certification may also require additional monitoring requirements and authorize a mixing zone. A draft 401 Certification is included as Appendix B in this Fact Sheet.

D. Permit Expiration

This permit will expire five years from the effective date of the permit. Permits may be administratively extended under 40 CFR 122.6 if all the requirements of that regulation are met.

VIII. REFERENCES

Application package dated October 5, 2004.

EPA 1991. *Technical Support Document for Water Quality-based Toxics Control*. Office of Water Enforcement and Permits, Office of Water Regulations and Standards. Washington, DC., March 1991. EPA/505/2-90-001.

18 AAC 70, the Alaska Department of Environmental Conservation's Water Quality Standards.

Alaska Water Quality Criteria Manual For Toxic and Other Deleterious Organic and Inorganic Substances.

The Catalog of Waters Important for the Spawning, Rearing or Migration of Anadromous Fishes and its associated atlas (the Catalog and Atlas or AWC, found on the internet site
http://www.sf.adfg.state.ak.us/SARR/FishDistrib/FDD_catalogs.cfm)

Suspension of Regulation Establishing Requirements for Cooling Water Intake Structures at Phase II Existing Facilities. 72 FR 37107 July 9, 2007.

40 CFR 423 – Steam Electric Power Generating Point Source Category

APPENDIX A

Healy Power Plant Location



APPENDIX B
DRAFT § 401 STATE CERTIFICATION

STATE OF ALASKA

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
CERTIFICATE OF REASONABLE ASSURANCE

A Certificate of Reasonable Assurance, as required by Section 401 of the Clean Water Act, has been requested by Environmental Protection Agency (EPA) for National Pollutant Discharge Elimination System (NPDES) Permit No. AK-002294-2, Healy Power Plant operated by Golden Valley Electric Association, Inc. (GVEA), for discharges of wastewater from power plant activities at or near 63° 51' north latitude and -148° 57' west longitude to the Nenana River.

Public Notice of the application for this certification was made in accordance with 18 AAC 15.140.

Water Quality Certification is required for the activity because the activity will be authorized by an (EPA) permit identified as NPDES No. AK-002294-2 and discharges into State waters will result from the activity authorized under this permit.

Having reviewed the permit, the Alaska Department of Environmental Conservation (ADEC) certifies there is reasonable assurance the activity, and the resultant discharge is in compliance with the requirements of Section 401 of the Clean Water Act and the Alaska Water Quality Standards (18 AAC 70) provided that the terms and conditions of the final certification are adhered to.

Through this certification, in accordance with 18 AAC 15.120, the final permit will constitute the permit required under AS 46.03.100, provided that the stipulations of the final certification are made part of the final permit. ADEC is specifying the following permit stipulations under authority of AS 46.03.110(d).

State of Alaska Certification Stipulations:

1. ADEC is authorizing a mixing zone for temperature from the discharges from Outfall 001 and 002. The mixing zone shall be 1000 feet in length, starting at the point of discharge from Outfall 001, the furthest upstream outfall, and ending downstream of Outfall 001. The mixing zone shall be 100 feet in width measured from the east bank of the Nenana River, and shall be from the bottom of the receiving water to the water surface. Within the authorized mixing zone, the water quality standards for temperature may be exceeded. All water quality standards must be met outside the mixing zone boundary.

Rationale:

In accordance with State Regulation 18AAC 70.240 as amended through June 26, 2003, the department will, in its discretion, authorize a mixing zone in a discharge permit if the department finds that the available evidence reasonably demonstrates that

- a. The applicable requirements of the chapter will be met*

- b. *The mixing zone will be as small as practicable*
- c. *An effluent or substance will be treated to remove, reduce, and disperse pollutants, using methods found by the department to be the most effective and technologically and economically feasible, consistent with the highest statutory and regulatory requirements.*
- d. *Ongoing compliance with 18 AAC 70.240 – 18 AAC 70.270 is a condition of any permit authorizing a mixing zone.*

The Healy Power Plant facility is comprised of two units, Healy Unit #1 and the Healy Clean Coal Project (HCCP). It is appropriate that one mixing zone would be authorized for the combined discharges of Healy Unit #1 and HCCP regardless of whether one or both were discharging.

The department has reviewed the results of a modeled thermal plume and the research of Stone & Webster Engineering Corporation completed for Alaska Industrial Development and Export Authority (AIDEA) in a 1995 report, Final Thermal Discharge Impact Analysis Elements of Technical Analysis-Healy Clean Coal Project (HCCP) and has determined that this authorized mixing zone is in compliance with the regulatory requirements.

2. The permittee shall establish at least 2 monitoring points to determine the temperature of the receiving water. The instantaneous temperature of the receiving water shall be recorded at least once per week for two calendar years between May 1 and October 31. If monitoring for temperature is not practical or safe due to ice conditions of the receiving water or river's edge, monitoring is waived until monitoring can be performed safely. Ice conditions shall be indicated on the discharge monitoring report. If there are no exceedances of the water quality standards for temperature during this two year period, the permittee may submit a request to ADEC to reduce the monitoring frequency to semi-monthly.

Monitoring at these stations shall occur on the same day:

- a. Station 1 shall be at a point representative of the receiving water temperature prior to the influences of any Healy Power Plant discharges.
- b. Station 2 shall be at a point approximately 1000 feet downstream of Outfall 001, near or at the outside boundary of the mixing zone, and shall not be more than 100 feet laterally from the east bank of the Nenana River.

The permittee will determine the coordinates of all monitoring stations by Global Positioning System and provide these coordinates to DEC with the first discharge monitoring report after receiving water monitoring has occurred.

Rationale: *In accordance with State regulations 18 AAC 70.245, the Department has authority to ensure that existing uses of the waterbody outside the mixing zone are maintained and fully protected. The monitoring will provide data to the Department that the mixing zone size is adequate and that the most stringent water quality standard*

limitation for Temperature, 18 AAC 70.20(b) 10, is being met outside of the mixing zone boundary.

3. The temperature at station 2 shall not exceed 15°C.

Rationale: In accordance with AS 46.01.110 (d), the Department may specify in a permit the terms and conditions under which waste material may be disposed of. Also, in accordance with State regulations 18 AAC 70.245, the Department has authority to ensure that existing uses of the waterbody outside the mixing zone are maintained and fully protected. This limit will ensure that the most stringent water quality standard limitation for Temperature, 18 AAC 70.20(b) 10, is being met outside of the mixing zone boundary.

4. The end of pipe instantaneous effluent maximum temperature from outfalls 001 and 002 shall not exceed 32 degrees C for more than 10 minutes in a calendar month.

Rationale: In accordance with AS 46.01.110 (d), the Department may specify in a permit the terms and conditions under which waste material may be disposed of. Also, in accordance with State regulations 18 AAC 70.245, the Department has authority to ensure that existing uses of the waterbody outside the mixing zone are maintained and fully protected. This limit will ensure that the temperature in the approved mixing zone will still be in compliance with the approved model and will prevent excessive temperatures in the receiving water and mixing zone.

May 08, 2009

DRAFT

Date

Sharmon Stambaugh
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APPENDIX C

Development of Effluent Limitations

This section discusses the basis for and the development of effluent limitations and monitoring requirements for the draft permit. The discussions include a description of anti-backsliding provisions required by the CWA (Section A), the development of technology-based effluent limitations (Section B), and WQBELs (Section C).

A. Antibacksliding Provisions

Under the anti-backsliding provisions of the CWA , any limit in a reissued permit must be at least as stringent as the current limits unless a change meets one of the exceptions listed in CWA Section 402(o)(2).

The total aromatic hydrocarbons limit was removed from monitoring because previous monitoring for this parameter showed a maximum concentration of 0.0021 mg/L. The analysis below shows that no reasonable potential exists for this constituent in the effluent. This is new information available since issuance of the previous permit and, therefore, this is an allowable exception to anti-backsliding requirements according to CWA § 402(o)(2)(B)(i) and does not fall under the exceptions to the use of new information.

B. Outfalls 001A, 001, and 002

1. Technology-based Evaluation

Section 301 of the CWA requires particular categories of industrial permittees to meet technology-based effluent limitation guidelines. The intent of a technology-based effluent limitation is to require a minimum level of treatment for industrial point sources based on currently available treatment technologies while allowing a permittee to choose and use any available control technique to meet the limitations.

EPA reviewed ELGs that may apply and, in this case, technology-based effluent limitations for the steam electric point source category are contained in 40 CFR 423. Since the HCCP was constructed after the promulgation of the effluent limitation guidelines, the new source performance standards in 40 CFR Part 423 generally apply. The effluent limitation guidelines contained in 40 CFR 423 include limitations for pH, polychlorinated biphenyl compounds, low volume wastes, metal cleaning wastes, bottom ash transport water, fly ash transport water, total residual chlorine, free available chlorine, cooling tower blow down, and coal pile runoff. In the event that waste streams from various subparts of 40 CFR 423.15 are combined for treatment or discharge, 40 CFR 423.15(n) requires that the quantity of each pollutant controlled in 40 CFR 423.16(a) - (m) attributable to each controlled waste source shall not exceed the specified limitation for that waste source.

The following technology-based effluent limitations from 40 CFR 423 apply to the Healy Power Plant:

- a. **pH:** The pH of all discharges, except once-through cooling water shall be within the range of 6.0 - 9.0 standard units.
- b. **Polychlorinated biphenyls:** The prohibition on the discharge of polychlorinated biphenyl compounds such as those commonly used for transformer fluid is retained from the previous permit.
- c. **Low volume waste:** The quantity of pollutants discharged from low volume waste sources shall not exceed the concentrations listed in the following table:

Pollutant	Maximum Daily Limit	Average Monthly Limit
TSS	100.0 mg/L	30.0 mg/L
Oil and Grease	20.0 mg/L	15.0 mg/L

These limitations apply to Outfall 001A and are retained from the previous permit.

d. **Metal cleaning wastes:**

Metal cleaning wastes from the facility are collected and transported to the original chemical supplier or to a qualified waste disposal facility; therefore, the above limits are not applicable. Since the facility does not discharge metal cleaning wastes, the 2000 permit contained a condition requiring "no discharge of metal cleaning wastewater." Section 402(o) of the CWA prohibits backsliding of effluent limitations, except in very limited cases as outlined in Section 402(o)(2) of the CWA. Pollutant parameters contained in metal cleaning wastes do not qualify for any of the listed exceptions; therefore, the prohibition is retained from the previous permit.

- e. **Bottom ash transport water:** The quantity of pollutants discharged in bottom ash transport water shall not exceed the concentration listed in the following table.

Pollutant	Maximum Daily Limit	Average Monthly Limit
Total Suspended Solids (TSS)	100.0 mg/L	30.0 mg/L
Oil and Grease	20.0 mg/L	15.0 mg/L

Although no bottom ash transport water is planned to be discharged, it is listed as a possible waste; therefore, these limitations apply to Outfall 001A and are retained from the previous permit.

- f. **Fly ash transport water:** The prohibition on the discharge of fly ash transport water is retained from the previous permit.

- g. **Total residual chlorine/free available chlorine:** The quantity of pollutants discharged in once-through cooling water shall not exceed the concentrations cited in the following table:

Pollutant	Maximum Concentration	Average Concentration
Total Residual Chlorine	0.2 mg/L	-
Free Available Chlorine	0.5 mg/L	0.2 mg/L
Note: Neither free available chlorine nor total residual chlorine may be discharged from any unit for more than two hours in any one day and not more than one unit in any plant may discharge free available chlorine or total residual chlorine at any one time unless the utility can demonstrate to the Regional Administrator that the units in a particular location cannot operate at or below this level of chlorination.		

Chlorine is not used in the Healy Unit No. 1 or the HCCP systems; therefore, the total residual chlorine and free available chlorine limits are not applicable. Since the facility does not use chlorine, the 2000 permit contained a condition requiring "no discharge of total residual chlorine or free available chlorine." Section 402(o) of the CWA prohibits backsliding of effluent limitations, except in very limited cases. Chlorine does not qualify for any of the listed exceptions; therefore, the prohibition will be retained from the previous permit.

- h. **Coal pile runoff:** The coal pile runoff from the facilities is directed to a zero discharge basin. Since coal pile runoff is not discharged, the 2000 permit contained a condition requiring "no discharge of coal pile runoff." Section 403(0) of the CWA prohibits backsliding of effluent limitations, except in very limited cases as outlined in Sections 402(0)(2) and 303(d)(4) of the CWA. The pollutant parameters contained in coal pile runoff do not qualify for any of the listed exceptions; therefore, the prohibition is retained from the previous permit.

C. Water Quality-based Evaluation

Section 301(b)(1)(C) of the CWA requires the development of limitations in permits necessary to meet WQS. Discharges to State waters must also comply with limitations imposed by the state as part of its certification of NPDES permits under section 401 of the CWA.

The NPDES regulation [40 CFR 122.44(d)(1)] implementing section 301(b)(1)(C) of the CWA requires that permits include limits for all pollutants or parameters which "are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to an excursion above any State WQS, including State narrative criteria for water quality."

The regulations require that this evaluation be made using procedures which account for existing controls on point and non-point sources of pollution, the variability of the pollutant in the effluent, species sensitivity (for toxicity), and where appropriate, dilution in the receiving water. The limits must be stringent enough to ensure that WQS are met, and must be consistent with any available wasteload allocation.

When evaluating the effluent to determine if WQBELs are needed based on chemical-specific numeric criteria, a projection of the effluent water concentration for each pollutant of concern is made. If a mixing zone is authorized by ADEC, then the dilution would be considered. The chemical-specific concentration of the effluent and ambient water and, if appropriate, the dilution available from the ambient water are factors used to project the receiving water concentration. If the projected concentration exceeds the numeric criterion for a specific chemical, then there is a reasonable potential that the discharge may cause or contribute to an excursion above the applicable WQS, and a WQBEL is required.

As mentioned above, sometimes it is appropriate to allow a small area of ambient water to provide dilution of the effluent. These areas are called mixing zones. Mixing zone allowances increase the mass loadings of the pollutant to the water body and decrease treatment requirements. Mixing zones can be used only when there is adequate ambient flow volume and the ambient water is below the criteria necessary to protect designated uses. Mixing zones can only be authorized by the Alaska Department of Environmental Conservation.

Water quality parameters that may be affected by the discharge are temperature, pH, petroleum hydrocarbons/oils and grease, chromium, copper, iron, lead, zinc, and toxic and other deleterious organic and inorganic substances/whole effluent toxicity (WET).

1. Reasonable potential analysis for toxics and other deleterious substances.

- a. A reasonable potential analysis was performed to determine the need for limits associated with toxics, such as heavy metals, and other deleterious substances that may be present in the discharge at the Healy Power Plant. A review of DMRs from the previous permit term and the recommendations found in Chapter 3 of the EPA's *Technical Support Document (TSD) for Water Quality-based Toxics Control* (EPA/505/2-90-001) were used to conduct this analysis. This approach combines knowledge of effluent variability, as estimated by a coefficient of variation (CV), with the statistical uncertainty due to a limited number of data to project an estimated maximum concentration for the effluent.

In general, the maximum projected effluent concentration (C_e) is defined by the TSD as the 99th percentile of the effluent data. This is calculated by multiplying the maximum reported effluent concentration by a reasonable potential multiplier (RPM). The RPM is determined from the coefficient of variation of the available data and the number of samples (n). The RPM decreases as the number of data points increases and as the variability of the data decreases.

The analysis then compares the calculated maximum projected concentration to the appropriate State water quality criteria for that pollutant, taking into account any applicable dilution factors. If the projected effluent concentration exceeds the criteria, there is “reasonable potential” (RP) and an effluent limit must be included in the permit.

Under the previous permit, the discharger was required to conduct monitoring for lead at Outfall 001A to support future analysis of reasonable potential. The results of the reasonable potential analysis are shown in Table C-1 for lead. Data utilized for this analysis was collected by GVEA in 2003 and January 2004. Because the data were collected for Outfall 001A, it is necessary to determine the maximum projected effluent concentration at Outfalls 001 and 002. For purposes of this analysis, the dilution of Outfall 001A to Outfall 001 (167:1) was calculated using the average cooling water flow of 16.72 MGD and the maximum observed 001A flow of 0.1 MGD (note that 9.25 MGD was a recorded flow at 001A; however, this is believed to be a reporting error and not representative of the actual flow rate). The lead concentration in the cooling water flow was assumed to be zero due to it being unlikely to be found naturally in the Nenana River intake water. For the purposes of this analysis, EPA assumed no receiving water dilution because no dilution volume has been granted by ADEC. *[EPA will modify this analysis and the WQBELs, if necessary, using any dilution factor and mixing zone authorized by ADEC in their Draft 401 Certification before issuing the final permit.]*

Table C-1. Reasonable Potential Analysis for Toxic Constituents

Parameter	Max Observed Effluent Conc. (µg/L)	n = # of samples	CV ¹	RPM ²	Effluent Dilution Factor	Receiving Water Dilution Factor	Ce ³	Lowest Applicable WQS ⁴	Reasonable Potential
Lead	396	10	0.6	2.9	167:1	0	6.8	3.47	Yes

¹CV = Coefficient of Variation. Due to only 2 samples having detected values for lead, the CV is assumed to be 0.6.

²RPM = Reasonable Potential Multiplier determined from the CV and the number of samples (n)

³Ce = the calculated maximum projected effluent concentration at Outfall 001. Ce = RPM x maximum observed effluent concentration / effluent dilution factor

⁴The lowest water quality standard is the “total recoverable” value calculated using Alaska’s Water Quality Criteria Manual for Toxics and Deleterious Substances. The standard was calculated using a hardness of 107 mg/L CaCO₃.

Results from the analysis shown in Table C-1 indicate that there may be reasonable potential for lead to occur above the most stringent state WQS in the effluent. There is, however, uncertainty because monitoring has only been conducted at internal Outfall 001A and not at Outfalls 001 or 002. Because of this uncertainty, WQBELs have not been established for lead in the draft permit. Monitoring for lead at Outfalls 001 and 002, which may be measured at the mixing box, is required by this permit and reasonable potential will be re-evaluated during the next permit reissuance. In developing the previous permit,

EPA evaluated the reasonable potential for copper, iron, zinc, and chromium. No reasonable potential was found for these pollutants.

2. Description of other WQBELs included in the draft permit.

- a. **Temperature:** Healy Unit No. 1 and the HCCP discharge once-through cooling water through Outfalls 001 and 002. The primary concern regarding once-through cooling systems is the development and dissipation of thermal plumes. The Nenana River is classified by the State of Alaska as fresh water suitable for aquaculture water supply, and growth and propagation of fish, shellfish, other aquatic life, and wildlife. Under these classifications, the Alaska WQS state that the temperature of the waterbody cannot exceed 20°C at any time, and the following maximum temperatures may not be exceeded, where applicable:

Migration routes: 15°C

Spawning area: 13°C

Rearing areas: 15°C

Egg & fry incubation: 13°C

The Alaska Department of Fish and Game has determined that the area of the Nenana River where the discharge will occur is not a spawning, or egg or fry incubation area. However, fish migration and rearing does occur in this area, and a maximum temperature of 15°C is required by the Alaska WQS.

The Alaska WQS at 18 AAC 70.240 allows for a mixing zone at ADECs discretion. WQS may be exceeded within a mixing zone prescribed by ADEC, but must be met outside the mixing zone boundaries. ADEC has provided a draft §401 Certification (Appendix B) proposing a mixing zone for the discharge. The boundaries of the proposed mixing zone are:

- i. The boundaries in the vertical plane shall be from the receiving water surface to the bottom;
- ii. The longitudinal boundaries shall be from Outfall 001 to a point 1000 feet downstream; and
- iii. The lateral boundaries shall be 100 feet in width from the east bank of the Nenana River.

The previous permit required that the effluent from the facility must not exceed 32°C for a total of 10 minutes over a one month period at the point of discharge (Outfall 001/002). The 32°C temperature limit will prevent temperatures from becoming excessive within the mixing zone. The draft certification requires the permittee to meet the Alaska WQS of 15°C outside the mixing zone although this limitation is not included

in the draft permit. From March 2000 to August 2004, the average temperature at receiving water sample locations 1, 2, and 3 (REC1, REC2, REC3; respectively) were 5.6°C, 6°C, and 5.5°C. Maximum recorded temperatures were 9.9°C, 10.7°C, and 10.3°C for REC1, REC2, and REC3, respectively. The instream temperature limits contained in the draft permit have been retained from the previous permit.

- b. **pH:** The Alaska WQS require a pH range of 6.5 - 8.5 standard units for waters protected for aquaculture water supply and contact recreation. The previous permit applied these limits to ensure compliance with the WQS and this limit is retained in the draft permit.
- c. **Petroleum hydrocarbons / oils and grease:** The Alaska WQS state that (1) total aqueous hydrocarbons (TAqH) in the water column may not exceed 0.015 mg/L (2) total aromatic hydrocarbons may not exceed 0.01 mg/L, and (3) surface waters and adjoining shorelines must be virtually free from floating oil, film, sheen, or discoloration. To ensure compliance with the WQS, the previous permit included a water quality-based limitation of 0.01 mg/L for Total Aromatic Hydrocarbons at Outfall 001A. Monitoring for this parameter showed a maximum concentration of 0.0021 mg/L, well below the WQS. In addition, this flow is diluted by a factor of 167:1 by Outfalls 001 and 002, therefore, no reasonable potential exists for this constituent in the effluent, and the limitation has been removed from the draft permit.